

# Taylor Park Vegetation Management: Silvicultural Matrix & Prescription Details<sup>1</sup>

**Table B- 1. Silvicultural matrix: Prescription applications**

Refer to the Glossary Section for definitions.

Stand Description	Stand Condition	Prescribed Treatment
In the wildland-urban interface, near developed private land or high-use recreation areas	N/A	<a href="#">Fuels Treatment</a> (follow nuances in other prescriptions for applications in the wildland-urban interface)
Along main roads where dead, dying, or damaged trees are at risk of falling onto roadways.	Where individual or concentrations of hazard trees within 200 feet of the road can fall directly to the road, or topple and strike other trees that could then fall or throw debris onto roads.	<a href="#">Roadside Hazard Tree Felling</a>
Dominated by Engelmann spruce and subalpine fir	Overstory is mature and overmature with areas of reduced vigor, health, or elevated mortality.	<a href="#">Group Selection</a>
	Overstory is healthy and in good condition.	<a href="#">Group Selection Defer Treatment</a>
	Overstory is immature, with a high stand density, trees are of a size suitable for posts, poles, and small-diameter sawlogs, and windthrow risk is low to moderate.	<a href="#">Commercial Thinning</a>
Dominated by lodgepole pine	Lodgepole pine stand is mature or overmature sawlog-sized, has a Dwarf Mistletoe Rating of 3 or greater, or windthrow risk is moderate to very high.	<a href="#">Clearcut</a>
	Lodgepole pine stand is dense, in a less than sawlog-size class, and has a Dwarf Mistletoe Rating of 3 or greater.	<a href="#">Clearcut of POL</a>
	Lodgepole pine stand has a Dwarf Mistletoe Rating of 1 or less, is two-storied with a mature overstory and has an adequately stocked understory of between 300 and 1,200 (or more) healthy seedlings or saplings per acre.	<a href="#">Overstory Removal</a>
	Lodgepole pine stand is mature sawlog-sized, has a Dwarf Mistletoe Rating of 2 or less, windthrow risk is low to moderate, and with little advanced regeneration is found in the understory. Site suitable for small Purchasers and/or is in the wildland-urban interface.	<a href="#">Uniform Shelterwood</a>
	Lodgepole pine stand is mature sawlog-sized, has a Dwarf Mistletoe Rating of 2 or less, windthrow risk is low to high, and with little advanced regeneration is found in the understory.	<a href="#">Group Shelterwood</a>
	Overstory is immature to mature, with a high stand density, trees are of a size suitable for posts, poles, and small-diameter sawlogs, and Dwarf Mistletoe Rating is 2 or less.	<a href="#">Commercial Thinning</a>
	Stand is immature, dense, with crowns self-pruning and crown bases elevated with Dwarf Mistletoe Rating of 2 or less. Site is "Dry" lodgepole pine. Average stand age is between 30 and 70 years.	<a href="#">Precommercial Thinning</a>
	Stand is immature, with Dwarf Mistletoe Rating of 2 or less, and stand density is not high enough to warrant Precommercial Thinning.	<a href="#">Dwarf Mistletoe Survey and Sanitation</a>
	Stand is adjacent to young, healthy lodgepole pine that has only limited dwarf mistletoe presence. The edge stand is lodgepole pine with dwarf mistletoe. Site is accessible for commercial harvest of sawlogs or products other than logs (POL).	<a href="#">Dwarf Mistletoe Edge Clearcut or Clearcut of POL</a>
	Stand is adjacent to young, healthy lodgepole pine that has only limited dwarf mistletoe presence. The edge stand is lodgepole pine with dwarf mistletoe. Site is not current accessible for commercial harvest of sawlogs or POL.	<a href="#">Non-commercial Dwarf Mistletoe Edge Clearcut</a>
	Stand is adjacent to young, healthy lodgepole pine that has only limited dwarf mistletoe presence. The edge stand has lodgepole pine with dwarf mistletoe. The edge stand is in or near riparian areas where mechanized operations are not allowed.	<a href="#">Hand Treatment of Dwarf Mistletoe in Wet Areas</a>
	Stand is immature to mature, dwarf mistletoe is not present, bark beetles are not present, the stand is healthy, and stand density is not excessive.	<a href="#">Defer Treatment</a>
	Engelmann spruce, lodgepole pine, or Douglas-fir with: --Bark beetle activity and tree mortality present --Fire mortality, or --A large area of windthrow	Less than 40 percent of basal area 5"+ is dead or dying, and windthrow risk is low to moderate. Can still work within <u>most</u> selection, shelterwood, or thinning scenarios, with a focus on merchantable salvage.
Between 40 and 65 percent of basal area is dead or dying, and windthrow risk is low. Can still work within <u>some</u> selection, shelterwood, or thinning scenarios, just with a focus on the removing dead.		<i>Individual tree salvage</i> <i>Clump salvage</i> – up to 0.25-acre size <i>Group salvage</i> – 0.25 to 2-acres size <i>Species removal</i> – merchantable-sized trees of the affected species, live and dead <a href="#">Salvage Clearcut Salvage Overstory Removal</a>
Over 40 to 65 percent of basal area is dead or dying, and/or windthrow risk moderate to high.		<a href="#">Salvage Clearcut Salvage Overstory Removal</a>

<sup>1</sup>This document was Appendix B in the Taylor Park Vegetation Management Environmental Assessment. The DN/FONSI was signed 05/07/2020.

## Prescription Details

### Lodgepole Pine Clearcut, Dwarf Mistletoe Edge Clearcut, and Clearcut of POL

**Forest Type:** Lodgepole pine dominated.

**Condition Class:** *Use this prescription in stands where lodgepole pine is the dominant tree species, disease and/or insects are present, overstory trees are mature to over mature, overstory decadence is making trees vulnerable to mortality or insect attack, where windthrow risk is moderate to very high restricting partial cut options, or where the merchantable volume per acre is too low for multiple regeneration harvest entries.*

*In lodgepole pine dominated stands where dwarf mistletoe is present adjacent to young healthy lodgepole pine, consider the application of a Dwarf Mistletoe Edge Clearcut.*

*In stands of lodgepole pine where tree diameter is generally less than sawlog standard (7 inches DBH), stands are excessively dense, and the pine is infested with dwarf mistletoe, use a Clearcut of Products Other Than Logs (POL). The lodgepole pine is of a size class suitable for utilizations as fence posts, corral poles, and other roundwood products.*

**Planned Silvicultural System:** Even-aged

**Harvest Method:** Clearcut

**Objectives:**

1. Create and maintain healthy even-aged, single-storied or two-storied stands in the longer term
2. Regenerate a fully stocked stand in the open areas after harvest
3. Develop stands of young, vigorous lodgepole pine (and other species where present) that are free to grow without dwarf mistletoe infection.
4. Stands that will not be susceptible to mountain pine beetle attack for several decades and will break up the fuel continuity in the area.

**Silviculture Prescription:**

Remove all merchantable live and dead conifer greater than seven-inch DBH for lodgepole pine and eight-inch DBH for other live tree species, except those required to meet wildlife snag requirements. Where windthrow risk is low, retain other trees species including Engelmann spruce, Douglas-fir, aspen, and limber pine as individuals or in clumps. Protect existing healthy conifer advanced regeneration within the stand.

In the **dwarf mistletoe edge clearcut** scenario (those areas surrounding young lodgepole pine stands) the area will be surveyed for presence of dwarf mistletoe, and if present, the edge generally within 100 to 300 feet of healthy, young trees would be harvested or non-commercially felled. Where edges are healthy lodgepole pine or other non-host tree species, harvest or treatment could be deferred. Where young stands are close to one another and edge cuts between would leave only a narrow strip of trees that would be vulnerable to windthrow, the entire strip would be removed.

In the **clearcut of products other than logs (POL)** scenario, the lower merchantable diameter limit could be down to one-inch DBH depending on product type.

Retain between 90 and 180 wildlife trees per 100 acres of all condition classes. Where insufficient dead trees are present to meet snag retention requirements (i.e., retention of standing dead trees to retain wildlife habitat), live lodgepole pine wildlife trees would be girdled to create wildlife snags. This would also reduce the spread of dwarf mistletoe, which requires a live host tree. Maintain a sufficient amount of downed logs (50 linear feet) for wildlife habitat and soil resource maintenance.

Sanitize the stand of any dwarf mistletoe infestation by felling infested trees and those potential infested neighboring trees. Non-merchantable cull trees not meeting wildlife tree needs should be felled to reduce competition with the future regenerated young stand. Follow-up with reforestation activities to ensure the recruitment of a fresh cohort of lodgepole pine, Douglas-fir, Engelmann spruce or limber pine as appropriate to the site. In areas away from the wildland-urban interface, pile and burn excessive concentrations of slash and woody debris, retaining 10 to 20 tons per acre of coarse woody debris. Remaining slash is to be lopped and scattered to lay within 24 inches of the ground.

In fuel treatments in the wildland-urban interface, whole-tree logging is encouraged to reduce fuel loadings. Hand or mechanically pile for burning, or mechanically treat excessive amounts of slash and woody debris, to reduce fuel loadings. The target for ground fuel loadings in the wildland-urban interface is 3 to 10 tons per acre in all diameter classes, and 1 to 8 tons per acre of coarse woody debris in 3-inch plus diameter class.

In the wildland-urban interface, avoid clearcuts of larger size unless shaped to reduce sight distance. Avoid placing clearcuts adjacent to private land to minimize negative impacts to the visual quality of the area as viewed from the private land. If clearcuts are placed adjacent to private, keep the unit size down to five-acres and 200-feet across.

No individual clearcut would exceed the 40-acre limitation identified in the forest plan (III-43).

## Overstory Removal

**Forest Type:** Lodgepole pine and Engelmann spruce-subalpine fir.

**Condition Class:** *In most applications, overstory removal is the final harvest of merchantable trees left from previous treatments (e.g., shelterwood seed cut). The stand is two-storied and two-aged, with an adequately stocked understory of healthy, young trees, overstory trees are mature to over mature, overstory decadence is making trees vulnerable to mortality or insect attack, dwarf mistletoe rating is less than 1, other diseases and/or insects are present, or where the merchantable volume per acre is too low for multiple harvest entries.*

*It should be expected that 50 percent of the advanced regeneration will be damaged or destroyed during the harvest. Thus, an adequately stocked understory should have between 300 and 1,200 non-cull seedlings or saplings per acre prior to harvest.*

**Planned Silvicultural System:** Even-aged

**Harvest Method:** Overstory Removal

### Objectives:

1. Create and maintain healthy even-aged, single-storied or two-storied stands in the longer term
2. Obtain a young, healthy, fully stocked stand of trees, free from competition by overtopping trees.
3. Regenerate a fully stocked stand in the open areas after harvest

4. Stands of young, vigorous lodgepole pine (and other species where present) that are free to grow without dwarf mistletoe infection.
5. Stands that will not be susceptible to bark beetle for several decades and will break up the fuel continuity in the area.

**Silviculture Prescription:**

Remove all merchantable live and dead conifer greater than 8 inches DBH (7-inch DBH for live lodgepole pine), except those required to meet wildlife snag requirements. Where windthrow risk is low, retain other trees species including Douglas-fir, aspen, and limber pine as individuals or in clumps. Protect existing healthy conifer advanced regeneration within the stand. Obtain additional regeneration in open areas.

Retain between 90 and 180 wildlife trees in lodgepole pine and 90 and 225 wildlife trees in spruce-fir per 100-acres of all condition classes. Where insufficient dead trees are present to meet snag retention requirements (i.e., retention of standing dead trees to retain wildlife habitat), live lodgepole pine wildlife trees would be girdled to create wildlife snags. This would also reduce the spread of dwarf mistletoe, which requires a live host tree. Maintain a sufficient amount of downed logs (50 linear feet) for wildlife habitat and soil resource maintenance.

Sanitize the stand of any dwarf mistletoe infestation by felling infested trees and those potential infested neighboring trees. Non-merchantable cull trees not meeting wildlife tree needs should be felled to reduce competition with the existing and future regenerated young trees. In open areas, follow-up with reforestation activities to ensure the recruitment of a fresh cohort of lodgepole pine, Douglas-fir, Engelmann spruce or limber pine as appropriate to the site. In areas away from the wildland-urban interface, pile and burn excessive concentrations of slash and woody debris, retaining 10 to 20 tons per acre except in wildland urban interface situations where it may be desirable for fuel loadings to be less. Remaining slash is to be lopped and scattered to lay within 24-inches of the ground.

In fuel treatments in the wildland-urban interface, whole-tree logging is encouraged to reduce fuel loadings. Hand or mechanically pile for burning, or mechanically treat excessive amounts of slash and woody debris, to reduce fuel loadings. The target for ground fuel loadings in the wildland-urban interface is 3 to 10 tons per acre in all diameter classes, and 1 to 8 tons per acre of coarse woody debris in 3-inch plus diameter class.

No individual overstory removal unit would exceed the 40-acre limitation identified in the forest plan (III-43 to 48) unless the following standards can be met after harvest and post-harvest treatments:

A minimum of 150 to 200 trees per acre non-cull trees remain, preferable 300 to 540 trees per acre, with minimum stocking present on 75 percent of the harvested area, crown closure exceeds 30 percent, and average tree height is 25 percent of adjacent mature stands for areas of visual quality objective retention or partial retention, or 6-feet tall for visual quality objective of modification and maximum modification.

## Salvage Clearcut or Salvage Overstory Removal

**Forest Type:** Lodgepole pine, Engelmann spruce-subalpine fir, and Douglas-fir mixed-conifer.

**Condition Class:** *Use this prescription in stands where insects, disease, windthrow, or fire has caused significant mortality of overstory trees. Refer to the [Silvicultural Matrix](#) for applicable conditions. If an adequate understory of live young trees will remain after harvest, the treatment would be referred to as an overstory removal. The elements of the Lodgepole Clearcut and Overstory Removal prescriptions would be followed if applicable.*

**Planned Silvicultural System:** Even-aged

**Harvest Method:** Clearcut or Overstory Removal, Salvage Focused

### Objectives:

1. Utilize dead and dying trees for production of lumber products before deterioration
2. Create and maintain healthy even-aged, single-storied or two-storied stands in the longer term
3. Regenerate a fully stocked stand in the open areas after harvest
4. Stands that will not be susceptible to bark beetle attack for several decades and will break up the fuel continuity in the area.

### Silviculture Prescription:

Remove all merchantable dead and associated live conifer, except those required to meet wildlife snag requirements. Where windthrow risk is low, retain other live non-host trees species including Douglas-fir, aspen, and limber pine as individuals or in clumps. Protect existing healthy conifer advanced regeneration within the stand. Obtain additional regeneration in open areas.

Retain between 90 and 180 wildlife trees in lodgepole pine and 90 and 225 wildlife trees in spruce-fir and Douglas-fir per 100-acres of all condition classes. Maintain a sufficient amount of downed logs (50 linear feet) for wildlife habitat and soil resource maintenance.

Sanitize the stand of any dwarf mistletoe infestation by felling infested live trees and those potential infested neighboring trees. Non-merchantable live cull trees not meeting wildlife tree needs should be felled to reduce competition with the existing and future regenerated young trees. In open areas, follow-up with reforestation activities to ensure the recruitment of a fresh cohort of lodgepole pine, Douglas-fir, Engelmann spruce or limber pine as appropriate to the site. In areas away from the wildland-urban interface, pile and burn excessive concentrations of slash and woody debris, retaining 10 to 20 tons per acre of coarse woody debris over 3-inches diameter. Remaining slash is to be lopped and scattered to lay within 24-inches of the ground.

In fuel treatments in the wildland-urban interface, whole-tree logging is encouraged to reduce fuel loadings. Mechanically pile for burning, or mechanically treat excessive amounts of slash and woody debris, to reduce fuel loadings. The target for ground fuel loadings in the wildland-urban interface is 3 to 10 tons per acre in all diameter classes, and 1 to 8 tons per acre of coarse woody debris in 3-inch plus diameter class.

In a salvage clearcut or overstory removal scenario, treatment unit size may exceed the 40-acre limit (Forest Plan III-43).

## Group Selection

**Forest Type:** Engelmann spruce/subalpine fir and mixed spruce/fir/lodgepole pine (minor component).

**Condition Class:** *Use this prescription in Engelmann spruce/subalpine fir dominated stands (lodgepole pine if present is only a minor component of the stand) where less than 40 percent of the basal area is dead (all tree species).*

**Planned Silvicultural System:** Uneven-aged

**Harvest Method:** Group Selection

### Objectives:

1. Create and maintain healthy stands with multiple stories in the longer term
2. Maintain or obtain a relatively dense understory and/or mid-story as cover for snowshoe hare, Canada lynx, and other wildlife species.
3. Regenerate a fully stocked stand in the open areas after harvest

### Silviculture Prescription:

Develop over time an uneven-aged stand with an irregularly balanced diameter distribution and four age classes/stories present. Harvest between 20 and 30 percent of the spatial area of the stand in groups from 0.25 acre to 2 acres in size. If bark beetle mortality is present, up to 40 percent of the spatial area maybe harvested. Target for removal concentrations of live and dead Engelmann spruce, a portion of the Engelmann spruce over 16 inches DBH that are proportionately more prone to spruce beetle attack, dead lodgepole pine, decadent, insect-infested and diseased trees. If concentrations of spruce bark beetle mortality are encountered during sale preparation that are larger than 2 acres, shift the prescription for that area to Salvage Clearcut/Overstory Removal. The mortality area could be integrated in the larger group selection unit as an extra-large group(s). Protect existing conifer regeneration within the stand, usually by not including young tree concentrations in cut groups. Do not harvest limber pine, Douglas-fir, or aspen if present. Obtain additional regeneration in open areas.

Whole-tree yarding is encouraged in green spruce/fir stands to remove unmerchantable green Engelmann spruce logs to landings for burning for spruce bark beetle habitat reduction. Whole-tree yarding can also reduce a portion of fuel loading in the stand to forest plan levels. If whole-tree yarding is not used, then yarding of unmerchantable green Engelmann spruce logs with a diameter of 8-inches or greater is required.

Retain between 90 and 225 wildlife trees per 100 acres of all condition classes. Where insufficient dead trees are present to meet snag retention requirements (i.e., retention of standing dead trees to retain wildlife habitat), live lodgepole pine wildlife trees would be girdled to create wildlife snags. This would also reduce the spread of dwarf mistletoe, which requires a live host tree. Maintain a sufficient amount of downed logs (50 linear feet) for wildlife habitat and soil resource maintenance.

Sanitize the stand of any dwarf mistletoe infestation by felling infested trees and those potential infested neighboring trees. Non-merchantable cull trees not meeting wildlife tree needs should be felled to reduce competition with the existing and future regenerated young trees. In open areas, follow-up with mechanized scarification to provide a mineral soil seedbed favorable to natural spruce and fir seed germination and establishment. Pile and burn excessive concentrations of slash and woody debris, retaining 10 to 20 tons per acre in coarse woody debris over 3 inches diameter, except in wildland-urban interface situations where it may be desirable for fuel loadings to be less. Remaining slash is to be lopped and scattered to lay within 24 inches of the ground.

## Two- or Three-step Shelterwood in Groups or Uniform Arrangement

**Forest Type:** Lodgepole pine-dominated and mixed lodgepole pine/spruce/fir (minor components).

**Condition Class:** *Use these prescriptions in stands of lodgepole pine dominance, and lodgepole pine with other tree species mixed in. Dwarf mistletoe is not present or at low enough levels that disease centers can be sanitized (stand dwarf mistletoe rating of 2 or less). Overstory is near or at rotation. There are two scenarios and two arrangements where shelterwood harvest is applicable:*

*A first entry to a three-step shelterwood is suitable where the basal area exceeds 140 to 160 square feet per basal area, the stand has not been previously shelterwood cut, or where the size of trees which could be removed falls more into the products other than logs class. This is referred to a shelterwood preparatory cut.*

*A second entry to three-step shelterwood, or a first entry to a two-step shelterwood, is applicable to stands with between 100 and 160 square feet per basal area, the stand has been previously shelterwood preparatory cut, or merchantable volume is too low to justify more than two harvest entries. This type of treatment is referred to a shelterwood seed cut or establishment cut.*

*Uniform shelterwood may be used where forest product sales to smaller-scale operators is anticipated, and windthrow risk is low or moderate. Otherwise group shelterwood is recommended to accommodate mechanized felling operations, for mutual residual tree protection in higher windthrow risk situations, and provide sunnier site conditions favorable to lodgepole pine establishment.*

**Planned Silvicultural System:** Even-aged or Two-aged

**Harvest Method:** Two-step Shelterwood, Seed Cut (Establishment Cut); and Three-step Shelterwood, Preparatory Cut

**Objectives:**

1. Reduce stand density, improve seed tree health and vigor by reducing competition and targeting dwarf mistletoe.
2. Feature the retention of tree species other than lodgepole pine.
3. Natural establishment of young, healthy lodgepole pine and other tree species from seed of the remaining overstory seed trees, which provide some protection from the elements.
4. Reducing stand susceptibility to mountain pine beetle and decrease the amount of continuous overstory fuels.
5. The treatment would create a two-aged, two-storied stand in the short term. In the longer term, after final overstory removal, a relatively even-aged, single-storied stand would result.

**Silviculture Prescription:**

For a preparatory cut, remove 30 to 35 percent of the basal area or spatial area, reducing overstory density to an average of 100 to 140 square feet basal area (considering group arrangement of residual trees). In uniform preparatory cuts, generally thin stands from below, allowing for development of more vigorous seed-producing trees for the future.

For seed cuts, remove 40 to 45 percent of the basal area or spatial area, reducing overstory density to an average of 60 to 100 square feet basal area, retaining the taller and healthier seed trees of all species. Trees maybe removed uniformly, or in groups of 0.25 acre to 2 acres in size, across the stand to promote regeneration by allowing sunlight and nutrients to reach the forest floor. Seeds from the remaining

overstory trees would germinate to foster regeneration. The neighboring residual trees would provide for partial shading of seed beds and protection of young trees from drying winds.

Target for removal any dwarf mistletoe trees, dead trees, trees with insect infestation, dead or broken topped trees, trees of poor form, forked, poor health or vigor, overtopped and suppressed trees. For sawlog production, harvest trees over 7 inches DBH for lodgepole pine and 8 inches DBH for other tree species. For POL production, an understory removal of trees under 8 inches may be prescribed.

Retain between 90 and 180 wildlife trees in lodgepole pine and 90 and 225 wildlife trees in spruce-fir and Douglas-fir per 100 acres of all condition classes. Where insufficient dead trees are present to meet snag retention requirements (i.e., retention of standing dead trees to retain wildlife habitat), live lodgepole pine wildlife trees would be girdled to create wildlife snags. This would also reduce the spread of dwarf mistletoe, which requires a live host tree. Maintain a sufficient amount of downed logs (50 linear feet) for wildlife habitat and soil resource maintenance.

Sanitize the stand of any dwarf mistletoe infestation by felling infested live trees and those potential infested neighboring trees. Non-merchantable live cull trees not meeting wildlife tree needs should be felled to reduce competition with the existing and future regenerated young trees. In open areas, follow-up with mechanized scarification to provide a mineral soil seedbed favorable to natural pine, spruce and fir seed germination and establishment.

In areas away from the wildland-urban interface, slash is to be lop and scattered to lay with two feet of the ground. Pile and burn excessive concentrations of slash and woody debris, retaining 10 to 20 tons per acre of coarse woody debris over 3 inches diameter.

In the wildland-urban interface, it may be desirable to prune the lower branches up as high as practical to reduce ladder fuels. Target trees with low-hanging dwarf mistletoe brooms. If spruce and fir are found, it is desirable to leave them unpruned as long as surface fuels in the surrounding area is reduced. Leaving trees unpruned may be desirable on a class-by-class basis for visual screening along open roads/trails and from adjacent private houses.

In fuel treatments in the wildland-urban interface, whole-tree logging is encouraged to reduce fuel loadings. Hand or mechanically pile for burning, or mechanically treat excessive amounts of slash and woody debris, to reduce fuel loadings. Where slash piles are embedded in the cutting unit, clear slash pile burn bays from around the pile site to minimize scorching of residual trees. The target for ground fuel loadings in the wildland-urban interface is 3 to 10 tons per acre in all diameter classes, and 1 to 8 tons per acre of coarse woody debris in 3-inch plus diameter class.

Schedule shelterwood reentries at 20-year intervals, with the removal of the remaining overstory trees in either 20 or 40 years.

The application of MCH pheromone capsules to mature Douglas-fir over 8-inches may be used to minimize Douglas-fir bark beetle caused mortality during periods of increased bark beetle populations.

## Commercial Thinning

**Forest Type:** Lodgepole pine-dominated stands.

**Condition Class:** *Use this prescription in stands dominated by dense, immature lodgepole pine pole timber with crowns self-pruning and crown bases elevated. Dwarf mistletoe is not present or at low enough levels that disease centers can be sanitized (stand dwarf mistletoe rating of 2 or less). Trees are of a size suitable for posts, poles, and small-diameter sawlogs. Site is “dry” lodgepole pine not suited as lynx or snowshoe habitat.*

*Note that no stands were specifically identified in Alternative 1 or Alternative 2 for this prescription. The prescription is to be utilized as part of the suite of tools in Fuel Treatments. There are stands identified for commercial thinning separately under the “Taylor Park Silvicultural Decision Memo” of 2017.*

**Planned Silvicultural System:** Even-aged or Uneven-aged

**Harvest Method:** Commercial Thinning

### Objectives:

1. Reduce stand density, improve tree health and vigor by reducing competition and targeting dwarf mistletoe.
2. Feature the retention of tree species other than lodgepole pine.
3. Obtain a stand of sawtimber-sized trees by the end of rotation.
4. Open stands up, break-up canopy continuity, and reduce fuel loading.

### Silviculture Prescription:

Commercially thin the stand from below, retaining the taller and healthier trees. Retain other tree species unless the individual tree is damaged or diseased. Generally, trees over eight-inches DBH will be retained since they are too large for pole timber. Thin to 4- to 12-foot crown spacing, or 80 to 120 square feet basal area. Residual spacing maybe uniform, irregular to clumpy. Larger open areas may be created to better reduce canopy continuity, balanced with nearby denser areas. Target for removal any dwarf mistletoe trees, insect-infested trees, trees of poor form, forked, poor health or vigor, overtopped and suppressed trees. If clumps of young, healthy seedlings and saplings are found in areas of open canopy, the clump maybe retained to provide vertical diversity, wildlife cover, visual screening, and a young tree component.

Follow-up harvest with dwarf mistletoe survey and sanitation. Conduct non-commercial release and weed of smaller diameter stems to reduce competition and improve stand health.

Slash is to be lop and scattered to lay with two feet of the ground in areas away from the wildland-urban interface.

In the wildland-urban interface, prune the lower branches up as high as practical to reduce ladder fuels.

In fuel treatments in the wildland-urban interface, whole-tree logging is encouraged to reduce fuel loadings. Hand or mechanically pile for burning, or mechanically treat excessive amounts of slash and woody debris, to reduce fuel loadings. Where slash piles are embedded in the cutting unit, clear slash pile burn bays from around the pile site to minimize scorching of residual trees. The target for ground fuel loadings in the wildland-urban interface is 3 to 10 tons per acre in all diameter classes, and 1 to 8 tons per acre of coarse woody debris in 3-inch plus diameter class.

## Young Stand Precommercial Thinning and/or Dwarf Mistletoe Survey/Sanitation

**Forest Type:** Lodgepole pine and mixed lodgepole pine/spruce/fir.

**Condition Class:** *In dense, smaller-diameter lodgepole pine dominated areas (with a component of spruce and fir less than 5 percent of the stems) that are considered to be in a “dry lodgepole pine habitat”, where average tree age is between 30 and 70 years old (except younger in extremely dense sapling and pole stands), and the average crown base has risen to at least 4 to 6 feet above the ground due to self-pruning. Other tree species would be retained to enhance diversity. Dwarf mistletoe survey and sanitation would occur concurrent with the thinning.*

*If young Engelmann spruce and subalpine fir exceed 5 percent of the tree species composition, the site is considered habitat for snowshoe hare and Canada lynx, so no precommercial thinning would take place.*

*In young lodgepole pine stands that are not so dense and/or between 10 and 50 years age, a survey for dwarf mistletoe presence would be conducted at 10-year intervals, and if detected, diseased trees would be treated. If dwarf mistletoe is found to be present on more than 35 percent of the young lodgepole pine scattered throughout the stand, or in scattered disease centers throughout the stand, then the stand is considered “compromised” and no sanitation or precommercial thinning would be conducted. If diseased trees are grouped together in a small enough part of the stand and the rest of the young trees are clean, the diseased patches could be treated.*

**Planned Silvicultural System:** Even-aged or Uneven-aged

**Treatment Method:** Precommercial thinning and disease control

### Objectives:

1. Maintain healthy and productive even-aged, single-storied or two-storied stands in the longer term.
2. Reduce competition between trees and provide space to grow.
3. Stands of young, vigorous lodgepole pine (and other species where present) that are free to grow without dwarf mistletoe infection.
4. Stands that will not be susceptible to bark beetle for several decades and will break up the fuel continuity in the area.

### Silviculture Prescription:

The intent of this treatment is the maintenance of desirable growth rates and promotion of tree vigor. Generally thin from below leaving the more dominant, healthy trees at a spacing of 8 to 12 feet between stems, depending on the size of the trees. Residual tree spacing is guided more by “crown spacing” of two to six feet between trees. Leave tree arrangement may be more uniform in some areas, and clumpier in others. Open areas are counterbalanced by denser areas. Where hand piling of slash and burning is indicated, slash bay openings up to 50-feet across will be created to accommodate the burning. Tree species other than lodgepole pine would be retained unless their removal is necessary for safety or operational purposes.

In the wildland-urban interface where windthrow risk is judged to be low or moderate, residual tree spacing maybe increased and/or more open areas installed with the goal of reducing crown continuity.

Thinning and sanitation operations are intended to be performed by hand with chainsaws. In the wildland urban interface, it may be practical for mechanized thinning to occur with the wider residual tree spacing.

A dwarf mistletoe survey would be completed during the thinning operation, and any diseased trees would be felled to reduce disease presence and spread.

Where thinning is not conducted due to lower density and/or younger age, conduct a dwarf mistletoe survey and sanitize as appropriate.

Slash from the thinning or sanitation operations would be lopped and scattered to lay within 2 feet of the ground. Lop and scatter retains the nutrient capital of felled trees on site for future use by the desired trees. However, in the wildland-urban interface and in locations of higher visual quality sensitivity, the thinning slash would be piled and burned to reduce fuel loadings.

Not all stands identified as “Young Stand – Precommercial Thin and/or Dwarf Mistletoe Survey/Sanitation” will be thinned or sanitized during the next 10 years. During implementation surveys, stands not ready for thinning would be identified and slated for deferred treatment. Consideration of snowshoe hare and Canada lynx habitat needs may determine whether a thinning of a particular site would occur, or whether the treatment would be modified to maintain or improve habitat conditions for the term. Stands will not be treated if they are found to be “compromised” by dwarf mistletoe, or if the condition of the trees is found to be too poor to respond to thinning release.

## **Non-commercial Dwarf Mistletoe Edge Clearcut**

**Forest Type:** Lodgepole pine dominated.

**Condition Class:** *This prescription is intended for use in areas of Texas Creek, which are currently poorly accessed by vehicle. In lodgepole pine dominated stands adjacent to young healthy lodgepole pine, where dwarf mistletoe is present, non-commercially fell and pile infested trees within 100-feet of young trees. This treatment is intended to protect young lodgepole pine, and to prepare for and compliment prescribed burning of the surrounding area.*

*If the young stand is found to be compromised by dwarf mistletoe, then no treatment would be necessary.*

**Planned Silvicultural System:** Even-aged

**Harvest Method:** Clearcut

### **Objectives:**

1. Create and maintain healthy even-aged, single-storied or two-storied stands in the longer term.
2. Regenerate a fully stocked stand in the open areas after harvest.
3. Develop stands of young, vigorous lodgepole pine (and other species where present) that are free to grow without dwarf mistletoe infection.
4. Stands that will not be susceptible to mountain pine beetle attack for several decades and will break up the fuel continuity in the area.

### **Silviculture Prescription:**

Fell or girdle all live lodgepole pine that are or potentially infested with dwarf mistletoe within 100 feet of the young, healthy lodgepole pine. Felling may be by hand, mechanical felling, or by mastication. Slash is to be hand or machine piled for burning. Where windthrow risk is low, retain other trees species including Engelmann spruce, Douglas-fir, aspen, and limber pine as individuals or in clumps.

These treatment units could be utilized in a prescribed burning scenario as anchor points for ignition and as control line.

## Hand Treatment of Dwarf Mistletoe in Wet Areas

**Forest Type:** Lodgepole pine dominated.

**Condition Class:** *In edge strips adjacent to young, healthy lodgepole pine with dwarf mistletoe infested lodgepole pine which are in or near riparian areas where mechanized harvest or mechanical treatment is not allowed.*

**Planned Silvicultural System:** Even-aged

**Harvest Method:** Clearcut or Species Removal

**Objectives:**

1. Create and maintain healthy even-aged, single-storied or two-storied stands in the longer term.
2. Regenerate a fully stocked stand in the open areas after harvest.
3. Develop stands of young, vigorous lodgepole pine (and other species where present) that are free to grow without dwarf mistletoe infection.
4. Stands that will not be susceptible to mountain pine beetle attack for several decades and will break up the fuel continuity in the area.

**Silviculture Prescription:**

Hand fell or girdle all live lodgepole pine that are or potentially infested with dwarf mistletoe within 100 feet of the young, healthy lodgepole pine. Slash is to be lopped and scattered to lay within two-feet of the ground. Retain other trees species including Engelmann spruce, subalpine fir, Douglas-fir, aspen, and limber pine.

## Roadside Hazard Tree Felling

**Forest Type:** Lodgepole pine or Douglas-fir dominated.

**Condition Class:** *Along main roads where dead, dying, or damaged trees are at risk of falling onto roadways. Main roads include the county roads, maintenance level 3 to 5 roads, and the more heavily used maintenance level 2 roads (see Table 20). The prescription is intended for implementation outside of the Alternative 2 treatment units.*

**Planned Silvicultural System:** Not Applicable

**Harvest Method:** Individual-tree or Clumps of Trees Felling.

**Objectives:**

1. Provide for the safety and convenience of the traveling public driving on the main open roads.
2. Maintain the scenic value of the visible roadside area.
3. Reduce fuel loadings in the roadside corridor.
4. Provide forest products, mainly firewood, to the public and commercial providers in a safe fashion.

**Silviculture Prescription:**

In a controlled environment (with traffic safety control and road flaggers), fell dead, dying, or damaged trees within 200 feet of the road so as not to land trees on the road, or to allow for immediate road surface clean-up to allow traffic to drive without risk of injury or damage to vehicles. Traffic delays are to be minimized.

Most of the tree felling will be chainsaw hand felling with some small equipment for yarding or piling material.

Slash from down trees maybe lopped and scattered to lay close to the ground if volumes are light. Where slash volume is heavier, slash is to be hand or machine piled for disposal by pile burning. Where tree boles are scattered or on steep slopes, the boles will be bucked to lay flat on the ground. Where tree boles are more concentrated and accessible from pullouts on the road, allow personal-use and commercial firewood cutters to gather and remove the wood. In more level areas, particularly near private land, yard the tree boles to roadside pullouts, and deck the wood for removal.

Along the county roads in Taylor Canyon, Spring Creek, and on Cottonwood Pass, do not allow Public motorized off-road travel for wood gathering. Along those road segments, allow for Public firewood gathering to SAFE roadside pullouts as authorized by specific Forest Product Permits (not general personal-use firewood permits). Where commercial or contract felling occurs, have the contractors close and rehabilitate off-road traveled surfaces to restore scenic value and prohibit off-road vehicle travel.

## Fuel Treatment in the Wildland-urban Interface

**Forest Type:** All cover types.

**Condition Class:** *In areas surrounding developed private land and high-use recreation areas.*

**Planned Silvicultural System:** Even-aged or Uneven-aged

**Harvest or Treatment Method:** Multiple treatment tools.

### Objectives:

1. Reduce surface fuel loadings, ladder fuels, and break-up forest canopy continuity.
2. Develop vegetative features or structures that are resistant to surface fire spread, crown fire development, and crown fire spread.
3. Provide for post treatment settings that are generally visually acceptable in the seen foreground.

### Silviculture Prescription:

A suite of treatments maybe applied to site-specific areas in order meet part or all of the objectives listed above in the forested areas surrounding developed private lands and high-use recreation areas. These areas are collectively known as the wildland-urban interface.

Different tools may be appropriate for each element on a site-specific basis. The intention is to set up an open-ended mix-and-match approach. Treatments may include commercial harvest removal of a portion or all trees, non-commercial treatments conducted on site to reduce fuel loading and continuity, or a mixture of both commercial and non-commercial. Treatment units may range in size from 0.25 acre to 100 acres, depending on site-conditions and objectives in the unique area. Many of the other prescriptions in this document articulate how they may be implemented in the wildland-urban interface.

Approach fuel treatment in three elements:

- Surface fuel treatment,
- Mid-canopy treatment, and
- Overstory canopy treatment.

## Surface Fuel Treatment

The goals at the surface are to reduce the volume of woody debris on site in terms of tons per acre, break up the continuity of that woody debris, reduce woody debris particle size, compact or reduce fuel depths, and provide conditions favorable for woody debris decomposition. For the Taylor Park analysis, the target for surface fuel loadings in the wildland-urban interface is 3 to 10 tons per acre in all diameter classes, and 1 to 8 tons per acre of coarse woody debris in 3-inch plus diameter class. Where commercial timber harvest is utilized, whole-tree logging is encouraged to reduce fuel loadings.

#### Surface Fuel Treatment options:

- No treatment.
- Treatment of pre-existing fuels.
- Treatment of activity (slash) fuels.
- Treatment of both pre-existing and activity (slash) fuels.
- Lop and scatter of slash.
- Hand piling and burning of slash.
- Spot machine piling and burning of slash.
- Full machine piling and burning of slash.
- Burned slash pile ash pit rehabilitation and seeding.
- Mastication of woody debris by mower-type machine to reduce fuel bed depth and particle size.
- Mastication of woody debris by excavator-type machine to reduce fuel bed depth and particle size.
- Dozer crushing and scattering of slash and woody debris to reduce fuel bed depth and particle size.
- Clipping of slash to reduce fuel particle size for more compact fuel beds.
- Trailer-mounted tub grinding of slash and larger-diameter woody debris to reduce particle size.

#### Mid-canopy Treatment

The goal is to reduce the ability of surface fire to climb upwards via “ladder fuels” into the crown of trees, where increased wind speed can cause fire intensification, spotting of embers, and spread via crown-to-crown fire.

#### Mid-canopy Treatment Options:

- No treatment.
- Pruning of lower limbs.
- Thin from below (Precommercial Thinning).
- Remove the understory and mid-story → POL or 8-inch below cutting specification. (Commercial Thinning or Shelterwood Harvest).
- Tree species removal for insect and disease control, leaving other non-host tree species.
- Commercial removal through commercial thinning, shelterwood, or group selection.

#### Overstory canopy treatment

The goal is to break-up canopy continuity and create openings, which will reduce the ability of crown fire to spread from crown-to-crown. Tree arrangements may vary as uniform, clumpy up to 33 feet across, groupy in areas from 0.25 acre to 2 acres, to individual trees left in an opening, or larger open areas. Since overstory tree sizes are larger, there are more opportunities for commercial harvest.

#### Overstory Canopy Treatment options:

- No treatment.

- Tree species removal for insect and disease control, leaving other non-host tree species.
- Uniform thin for opening the canopy (Commercial Thinning or Uniform Shelterwood).
- Uniform/clumps/groups/openings in “Variable Thinning” or “Individuals, Clumps, and Openings” (ICO) practices.
- Traditional Group Shelterwood.
- Traditional Group Selection.
- Clearcut/Overstory Removal.
- Salvage Clearcut/Salvage Overstory Removal.

## Defer Treatment

**Forest Type:** All cover types.

**Condition Class:** *Where the stand is immature to mature, dwarf mistletoe is not present, bark beetles are not present, the stand is healthy, and stand density is not excessive. If conditions change due to infestation by insects or due to forest fire mortality, another prescription could become applicable.*

### Silviculture Prescription:

Defer treatments during the 2020s. Reevaluate stand conditions during the next planning cycle and treat if needed.

## Common Post-commercial Harvest Treatments

The following is a list of common follow-up activities applied to stands after commercial timber harvest. They are considered integral to the harvest operation. Not all activities apply to each situation.

- Remove commercial products other than sawlogs (POL) from sub-sawlog diameter classes.
- Burning of landing slash piles.
- Post-harvest evaluation in first-year after harvest.
- Reforestation surveys at years three and five after harvest, site preparation for natural, or planting.
- No treatment.
- Release and weed – dwarf mistletoe survey and sanitation.
- Release and weed – cull tree felling.
- Green lodgepole pine girdling for wildlife trees.
- Precommercial thinning of the understory.
- Burned slash pile ash pit rehabilitation and seeding.
- Site preparation for natural regeneration – dozer scarification.
- Site preparation for natural regeneration – spot slash piling/burn and dozer scarification.
- Site preparation for natural regeneration – dozer full machine piling/burn.
- Site preparation for planting – dozer scarification and spot slash piling/burn.
- Fill-in tree planting.
- Full tree planting.
- Additional fuel reduction treatments, the suite.

## Stand-Replacement Prescribed Burning

**Forest Type:** Lodgepole pine dominated.

**Condition Class:** *In lodgepole pine dominated forest where commercial timber harvest is not currently appropriate or practical due to poor access, rocky terrain, and steep slopes.*

**Planned Silvicultural System:** Even-aged

**Treatment Method:** Prescribed Fire

**Objectives:**

1. Create and maintain a mosaic of stands of differing age classes and structures that mimics lodgepole pine forests influenced by forest fires prior to fire suppression.
2. Individual stands will tend to be even-aged, single-storied or two-storied in the longer term.
3. Restore natural processes in portions of lodgepole pine forestlands.
4. Reduction of naturally accumulating fuel loadings at a large-scale.

**Silviculture Prescription:**

It is desirable that the resulting forest condition be a mosaic of full canopy mortality mixed with areas of partial overstory mortality and areas with no overstory mortality. The management goal is for one-third to one-half of the prescribed burn area to have near-full to full canopy mortality. The tool is to use stand-replacing prescribed burning to create short-range and short-duration crown fires that mimic presettlement forest fires. Achieved using mixed-severity burns.

Apply stand-replacing prescribed fire in lodgepole pine forest from prepared and natural fuelbreaks to facilitate burn control. In preparation for the prescribed burning, non-commercial fuel treatments and commercial timber harvest units will need to be completed to facilitate control of burning operations. Ignition may be by hand or aerial.

In some individual stands, a target of 75 percent of the overstory trees are to be killed by fire in areas averaging 60 to 80 acres. The range of overstory mortality area can be from 0.25 acre (for group torching) to 100 acres size. The range of mortality of overstory trees can be from 0 percent (no underburn or light underburn not causing overstory mortality) to 100 percent (full canopy mortality). In other stands, the form of burning will be more of a “mosaic burn” with intense burning in some areas and total avoidance in other areas. There will be individual-tree and group torching of trees, particularly in badly dwarf mistletoe-infested centers. Mortality of understory trees is acceptable and reduction of pre-existing fuel loadings is desirable.

It is desired that young lodgepole pine stands embedded in the prescribed burn unit which are relatively free of dwarf mistletoe infestation be avoided by fire. Young stands can be partly shielded by non-commercial strip clearcuts around them, precommercial thinning of the young trees with hand piling and burning of slash.

Young lodgepole pine stands found to be infested with dwarf mistletoe are to be targeted for stand-replacing ignition.

Non-forested areas are not targeted for ignition except for contingency.